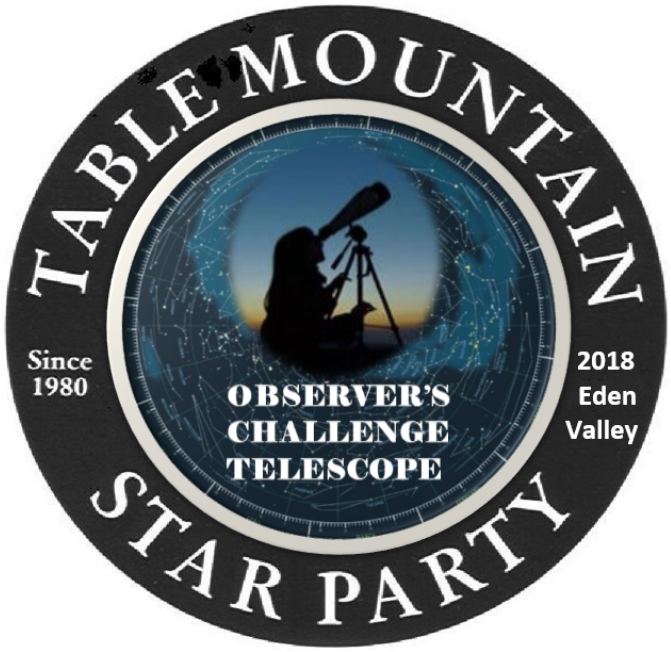
Telescope Observer's Challenge:



If you came to the Table Mountain Star Party (TMSP) with your telescope or have access to a telescope while at the TMSP this program is for you. This program will give you an opportunity to observe 30 or more showcase objects under the ideal conditions of the pristine Eden Valley skies. It's not super challenging this year, but will get progressively harder each year. You will get a button for finding just 25 objects. All observations must be done during the TMSP. The "Fab Five" program consists of a list of objects in five categories; Galaxies, Open Clusters, Globular Clusters, Solar System Objects and Nebulae. You must observe and document five objects from each category. You must find the objects yourself, without help from anyone else. Enter the required information and for at least one of the objects in each of the five categories you must sketch what you see through the eyepiece. Any size telescope can be used. All objects are within range of small to medium sized telescopes, and are available for observation between 10:00PM and 4:00AM any time during the TMSP. All objects are listed in Right Ascension order so that you can observe them before they set in the West, or as they rise in the East.

To receive your button, turn in you observations to ***Mark Simonson or Ron Mosher (Observation Challenge Coordinators)*** any time during the TMSP. If you finish the list the last night of TMSP, and we are not available to give you your button, just mail your observations to me at 1519 Ridge Dr., Camano Island, WA. 98282, or email your observations to me at marknilse@yahoo.com, and I will see that you get a button. The Novice Observer's Challenge can only be earned once per person.

Galaxies

#	Object	R.A.	Dec	Con	Size	Mag	Notes
T1	NGC 147	00 33.1	+48 30	Cas	13.2	10	Also Caldwell 17 Dwarf galaxy 2.5 million Ly
T2	NGC 205 M110	00 40.2	+41 41	And	21.9	8.9	Dwarf elliptical galaxy 2.6 million Ly
T3	NGC 224 M31	00 42.3	+41 16	And	192.4	3.4	The Andromeda Galaxy Spiral 2.5 million Ly
T4	NGC 598 M33	01 33.5	+30 39	Tri	70.0	5.7	The Triangulum Galaxy Spiral 3 million Ly
T5	IC 342	03 46.4	+68 05	Cam	21.4	9.1	Also Caldwell 5 Face on Spiral 10.7 million Ly
T6	NGC 3031 M81	09 55.3	+69 03	UMa	26.9	6.9	Bode's Galaxy Spiral 12 million Ly
T7	NGC 3034 M82	09 55.8	+69 41	UMa	9.0	8.4	An irregular galaxy very close to M81 12 million Ly
T8	NGC 4258 M106	12 18.5	+47 18	CVn	18.6	9.1	Spiral 27.3 million Ly
T9	NGC 5194 M51	13 29.5	+47 11	CVn	11.2	8.4	Whirlpool galaxy spiral interacting 25 million Ly
T10	NGC 6207	16 43.0	+36 49	Her	3.0	11	Spiral galaxy 30 million Ly located next to M13
T11	NGC 6503	17 49.4	+70 09	Dra	6.0	10	Dwarf spiral galaxy 17 million Ly
T12	NGC 6946	20 34.5	+60 09	Cyg	11.5	9.6	Face on spiral galaxy 22.5 million Ly
T13	NGC 6951	20 37.0	+66 06	Cep	3.9	11	Face on spiral 75 million Ly
T14	NGC 7331	22 37.0	+34 24	Peg	10.5	10	Also Caldwell 30 unbarred spiral 40 million Ly
T15	NGC 7640	23 22.0	+40 50	And	10.5	11	A barred spiral edge on 29.7 million Ly

Open Clusters

#	Object	R.A.	Dec	Con	Size	Mag	Notes
T16	NGC 663	01 46.0	+61 15	Cas	16.0	7.1	Also Caldwell 10 6800 Ly
T17	NGC 869/884 Double Cl	02 19.0	+57 08	Per	29.0	5.3	The Double Cluster also Caldwell 14 7500 Ly
T18	Mel 111 Coma Cluster	12 25.0	+26 00	Com	275.0	1.8	The Coma Star Cluster about 40 bright stars 280 Ly
T19	IC 4665	17 46.3	+05 43	Oph	70.0	4.2	OpCl 1400 Ly
T20	NGC 7789	18 27.7	+06 34	Oph	27.0	4.6	OpCl also Caroline's Rose 7600 Ly
T21	NGC 6645	18 32.3	-16 53	Sgr	10.0	8.5	The Ringlet Cluster 26400 Ly
T22	NGC 6683	18 42.1	-06 12	Sct	11.0	9.4	OpCl 39000 Ly
T23	NGC 6738	19 01.1	+11 37	Aql	15.0	8.3	OpCl 2200 Ly
T24	NGC 6755	19 07.8	+04 14	Aql	15.0	7.5	OpCl 4600 Ly
T25	Cr399 Coathanger	19 25.4	+20 11	Vul	60.0	3.6	Asterism known also known as Brocchi's Cluster
T26	NGC 6823	19 42.2	+23 05	Vul	40.0	7.1	OpCl with nebulosity 6000 Ly
T27	NGC 6910	20 23.1	+40 47	Cyg	80.0	7.4	The Rocking Horse Cluster 3700 Ly
T28	NGC 6913 M29	20 23.9	+38 32	Cyg	6.0	6.6	OpCl 6000 Ly
T29	NGC 6939	20 31.3	+60 39	Cyg	70.0	7.8	3860 Ly over 1 billion years old
T30	NGC 7092 M39	21 32.2	+48 26	Cyg	31.0	4.6	OpCl 824 Ly

Globular Clusters

#	Object	R.A.	Dec	Con	Size	Mag	Notes
T31	NGC 5272 M3	13 42.2	+28 23	CVn	16.0	5.9	1 of approx. 150 GbCl orbiting Milky way 3400 Ly
T32	NGC 5904 M5	15 18.6	+02 05	SerCp	17.0	5.7	A Globular Cluster 24500 Ly
T33	NGC 6205 M13	16 41.7	+36 28	Her	17.0	5.7	The best GbCl northern hemisphere 22200 Ly
T34	NGC 6229	16 47.0	+47 32	Her	4.5	9.4	Another GbCl in Hercules 10000 Ly
T35	NGC 6218 M12	16 47.2	-01 57	Oph	15.0	6.8	GbCl 15700 Ly
T36	NGC 6254 M10	16 57.1	-04 06	Oph	15.0	6.6	GbCl 14300 Ly
T37	NGC 6341 M92	17 17.1	+43 08	Her	11.0	6.4	GbCl 26700 Ly
T38	NGC 6402 M14	17 37.3	-03 14	Oph	11.0	8.3	GbCl 30000 Ly
T39	NGC 6656 M22	18 36.2	-23 54	Sgr	32.0	5.1	GbCl near galactic bulge region 10000 Ly
T40	NGC 6712	18 53.0	-08 42	Scu	7.2	8.6	GbCl 22500 Ly
T41	NGC 6809 M55	19 39.5	-30 57	Sgr	19.0	7.4	GbCl 17600 Ly
T42	NGC 6838 M71	19 53.4	+18 46	Sge	7.2	6.1	GbCl 12000 Ly
T43	NGC 6934	20 34.1	+07 24	Del	8.4	8.8	Also Caldwell 47 50000 Ly
T44	NGC 7078 M15	21 30.0	+12 10	Peg	12.0	6.0	GbCl 33600 Ly
T45	NGC 7089 M2	21 33.2	-00 49	Aqu	16.0	6.3	GbCl largest known globular cluster 33000Ly

Solar System Objects

Pla – Planet *Ast – Asteroid* *Sat – Satellite*

#	Object	Type	R.A.	Dec	Con	Size	Mag	Notes
T46	Uranus	Pla	02 01.1	+11 45	Ari	.14	5.7	Can you make out any moons? Color 1.8 billion miles
T47	Juno	Ast	03 13.3	+10 25	Ari	.01	8.6	Asteroid in the main belt 167.4 million miles
T48	Sun spots	Star	09 19.2	+15 36	Can	31’	-26	How many sunspots 93 million miles
T49	Solar prominences	Star	09 19.2	+15 36	Can	31’	-26	How many prominences 93 million miles
T50	Jupiter	Pla	14 47.4	-15 10	Lib	37.0	-2	Can you see the 4 Galilean Moons? 483.6 million miles
T51	Ganymede	Sat	14 48.5	-15 15	Lib	1.0	5.7	Largest satellite of Jupiter 483.6 million miles
T52	Great Red Spot Jupiter	Pla	14.47.4	-15 10	Lib	-	-2	Very large atmospheric storm on Jupiter
T53	Vesta	Ast	17 26.3	-23 23	Oph	-	5.8	2nd largest asteroid in the main belt 133 million miles
T54	Titan	Sat	18 12.1	-22 37	Sgr	1.0	9.9	Largest satellite of Saturn 855.6 million miles
T55	Saturn	Pla	18 13.1	-22 37	Sgr	42	1.1	Can you see the rings? Titan? 855.6 million miles
T56	Rings of Saturn	Pla	18 13.1	-22 37	Sgr	-	1.1	Can you make out the Cassini Division
T57	Mars	Pla	20 20.1	-26 17	Cap	24	-2	Can you make out any features? 35.3 million miles
T58	Neptune	Pla	23 08.2	-06 36	Aqr	.06	7.8	Can you make out any moons? Color? 2.6 billion miles
T59	Triton	Sat	23 08.2	-06 36	Aqr	-	14	Largest satellite of Neptune

Nebulae

DNeb – Dark Nebulae *ENeb – Emission Nebulae* *PNeb – Planetary Nebulae* *RNeb – Reflection Nebulae*

#	Object	Type	R.A.	Dec	Con	Size	Mag	Notes
T60	NGC 1579	RNeb	04 30.0	+35 16	Per	12.0	-	The Northern Trifid 2000 Ly
T61	NGC 6210	PNeb	16 44.3	+23 49	Her	12	9.0	6500 Ly
T62	NGC 6523 M8	ENeb	18 03.3	-24 23	Sag	90	6.0	The Lagoon Nebula 4100 Ly
T63	NGC 6572	PNeb	18 12.6	+06 51	Oph	6.0	9.0	2400 Ly
T64	NGC 5720 M57	PNeb	18 53.3	+33 01	Lyr	86.0	8.8	PNeb also Ring Nebula 2300 Ly
T65	NGC 6826	PNeb	19 45.0	+50 34	Cyg	126.0	8.8	The “Blinking Planetary” also Caldwell 15, 2000 Ly
T66	NGC 6853 M27	PNeb	19 59.6	+22 43	Vul	8.0	7.3	The Dumbbell Nebula 1360 Ly
T67	NGC 6888	ENeb	20 12.7	+38 21	Cyg	18.0	7.4	The Crescent Nebula 5000 Ly
T68	NGC 6960 Veil West	ENeb	20 45.4	+30 43	Cyg	70.0	7.0	The west part of a supernova remnant 1470 Ly
T69	LDN 935	DNeb	20 56.4	+43 52	Cyg	90	-	Wide dark lane separating NGC 7000 and IC 5070
T70	NGC 7000	ENeb	20 59.1	+44 31	Cyg	120	4.0	The North American Nebula 1600 Ly
T71	NGC 7023	RNeb	21 00.3	+68 10	Cep	18.0	7.0	The Iris Nebula also Caldwell 4 1300 Ly
T72	NGC 7009	PNeb	21 04.1	-11 21	Aqu	1.4	8.0	The Saturn Nebula 2000 Ly
T73	NGC 7662	PNeb	23 25.5	+42 33	And	2’	9.0	The Blue Snowball 4000 Ly

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